



An aerial shot shows the massive landslide that, in an instant, wiped out all traces of a section of Highway 1, and dramatically changed the surrounding landscape along the Big Sur coast. Recognizing the highway's importance, Caltrans almost immediately began plans for rebuilding.

Iconic Big Sur Route Reclaimed

Highway 1 Crews Have Realigned, Strengthened Section After Massive Slide

Building a new roadway across the remnants of the largest known landslide ever to strike the Big Sur coast has mostly finished, and Highway 1 opened in mid-July, about two months ahead of schedule.

"Rebuilding Highway 1 and restoring traffic along the Big Sur coast has been our priority and by opening the highway sooner than expected, it will boost the many Central Coast communities affected by this major landslide," said Tim Gubbins, Director for Caltrans District 5 based out of San Luis Obispo.

The slide that buried the highway on May 20, 2017 dumped more than 6 million cubic yards of material atop the roadway and into the ocean, adding 15 acres of new coastline. It occurred after one of the most severe winters on record battered the Central Coast, and the rest of California.

Miraculously, no one was injured or killed by the slide, but the collapsed cliff side obliterated a ¼-mile section of roadway.

Caltrans District 5 immediately readied rebuilding plans, consulting with various state, local and federal resource

agencies. John Madonna Construction of San Luis Obispo was awarded the emergency contract for the project.

The Mud Creek landslide came only months after the Pfeiffer Canyon Bridge, about 36 miles north on Highway 1, was severely undermined by flooding and had to be demolished. With Highway 1 access cut off from the north, and at Mud Creek to the south, the Big Sur community was largely isolated for about five months.

With the goal of reestablishing a link to the outside world as soon as possible, a new Pfeiffer Canyon Bridge was completed in just over a half-year, restoring northern highway access for residents and travelers in October 2017. Traffic has been flowing without incident across the new bridge since that time.

Construction crews on Mud Creek are now busy hauling fill material to create the grade for the northern section of the new highway alignment.

The new roadway has been realigned across the landslide and buttressed with a series of embankments, berms, rocks, netting, culverts and other stabilizing material, according to Department engineers and geologists.

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A larger and more interconnected drainage system has been installed. The main feature is a 63-inch diameter pipe that will drain runoff from the southern portion of the project and Mud Creek, which is not a year-round water source but can rage during stormy periods. A four-foot diameter piping network also has been laid, and replaces a series of culverts that would regularly clog with mud and debris.

A 20-foot high berm was constructed as a retaining wall on the south side of Mud Creek. Crews stabilized a 20-foot vertical face on the east side of the berm with a Hilfiker Retaining Wall, a manufactured product made of welded wire matting that holds compacted backfill material. A berm also was constructed on the north side of Mud Creek. The slope will need to consolidate and settle for two to three winters to become more stable.

Construction progressed at a good pace during this herculean effort, despite challenging conditions. Roadwork cannot be done at night or when fog impairs the ability of safety spotters to spot falling rock. The omnipresent threat of more slides also prevents work such as



Crews pour a concrete drainage pad under the five-foot-plus diameter pipe that will drain excess water from the Mud Creek area.

engineered embankment construction from taking place below the ongoing slide removal area.

Caltrans reopened the new Highway 1 alignment at Mud Creek when favorable weather and longer work days moved up the construction schedule. Roadwork will resume with ongoing maintenance activity after the opening, which may require intermittent closures. The project cost is estimated at \$54 million. **MM**

Source: Susana Z. Cruz, public information officer, Caltrans District 5



Construction crews create a new roadway base for the middle and north sections of the Mud Creek project. Access roads have been constructed for future maintenance of the site. A rock barricade, called a revetment, was built along the shoreline to keep the tide from eroding the embankments.